Data Logger for Marathon Runners

Students: NG, Siu To  WONG, Ho Ming  WONG, Yee Man

Supervisor: Professor WOO, Tim K.T.

Results

Data Logger for Marathon Runners

Combining the use of GPS and Pedometer for tracking

Using GPS alone for tracking

Using Pedometer alone for tracking

From the results, it can show that although the pedometer is not accurate enough for tracking, it can help to receive data when the GPS cannot receive signals in indoor or when the signal is blocked by obstacle.

In the following graphs, green line represent the path tracked by pedometer, red line or blue line represent the path tracked by GPS.

Methodology

1. Graphical User Interface

The following figure shows the flow of our program. The program is user friendly which the user can easily realize the use of every buttons. For more details, the user can go to the Introduction page to see the user guidelines.

2. SQLite

Some important data need to be stored, such as username, distance, time, latitude and longitude in this project. They are stored in the internal memory of the mobile while running the program. In order to manage these data effectively, a database is needed in the program. As a result, SQLite, which is a database program for Android, is used. This allows us to easily store our information in Android’s built-in databases and view them in a list format.

System Block Diagram

We have divided our system into four parts. The first part is the GPS. The second part is the pedometer. The third part is the SQLite. The fourth part is the tracking system. They are illustrated as follow.

Methodology

1. Graphical User Interface

The following figure shows the flow of our program. The program is user friendly which the user can easily realize the use of every buttons. For more details, the user can go to the Introduction page to see the user guidelines.

2. SQLite

Some important data need to be stored, such as username, distance, time, latitude and longitude in this project. They are stored in the internal memory of the mobile while running the program. In order to manage these data effectively, a database is needed in the program. As a result, SQLite, which is a database program for Android, is used. This allows us to easily store our information in Android’s built-in databases and view them in a list format.

Three functions of the tracking system

1.) Recording

The path which the user has run before the Recording function is turned off will be saved as a text file.

2.) Load Path

The saved path text files can be retrieved when the Load Path button is pressed. A list of text files will appear on the screen.

3.) Clear Path

Clear all the paths on the map.

From the results, it can show that although the pedometer is not accurate enough for tracking, it can help to receive data when the GPS cannot receive signals in indoor or when the signal is blocked by obstacle.

Further Improvement

A more accurate result should be conducted by carrying out more tests on:

- calibrating the bearing of the pedometer.
- the linking between the GPS and the pedometer in the tracking system.

Conclusion

Our data logger is said to be accurate in a given condition that the x-axis angle of the pedometer is less than 90 degree.

The limitation of the data logger:

- the incorrectness of the pedometer.
- difficult for us to measure the accurate path which the user is running on.